

CHOLERA PRECAUTIONS AND PORT SANITARY ADMINISTRATION IN ENGLAND.

THE increase of the medical staff of the Local Government Board has enabled a general medical survey of English ports to be systematically taken in hand by the Board under the direct supervision of Dr. Thorne Thorne, with a view to ascertaining how far the local authorities are prepared to deal with any cases of cholera that may be imported into this country, and, if need be, with ships from ports infected with cholera. Attention is at the present moment centred in the examination of the eastern and southern coasts, inspectors being engaged at several ports between Northumberland and Cornwall. The particular points the special officers of the Local Government Board are to inquire about are: (1) The sufficiency of medical inspection of all vessels entering ports; (2) the arrangements for the detention of infected vessels by Customs officers; (3) the nature of the position and adequacy of the mooring stations; and (4) the hospital provision and means of disinfection.

Within the last few days Dr. Bulstrode has visited the Poole and Falmouth districts. The special inquiry as to the port sanitary administration in the Mersey, which was commenced some weeks ago at Liverpool by Mr. Jenner-Fust and Dr. Barry, on the part of the Local Government Board, has been resumed by the same inspectors at Runcorn, the intention being to establish a port sanitary authority, having control over the whole of the estuary of the Mersey. The present arrangements for that river are far from satisfactory, and might, in the event of much intercourse with cholera-infected foreign ports, involve danger to the country, as well as cause friction between the various local authorities of towns on the Mersey.

In 1885 and 1886 a similar visitation of a large number of our seaboard districts was made by the inspectors of the Local Government Board; but the insufficiency of the staff then at Sir George Buchanan's disposal caused the work to be left uncompleted. Yet an important stimulus was given by it to our port sanitary administration. The circumstances of the survey now projected will, it is hoped, enable it to be more completely carried out, and to secure enhanced energy in the inspection of shipping at many points where supervision is at the present time somewhat lax.

As regards the adequacy of our present system of supervising vessels from foreign ports, there is one respect in which improvement seems urgently called for. On a vessel arriving at an English port from abroad an officer of Customs, who, it must be remembered, is not a medical man, comes alongside and puts to the captain the usual "quarantine" questions, including, amongst others, inquiries as to the existence of any sickness at the port of departure, and as to whether there has been during the voyage, or is at the time of arrival in port, any case of illness on board. If there is illness on board, if, in fact, to use the words of the official Cholera Regulations, the Customs officer "ascertain from the master of such ship or otherwise, or have reason to suspect that the ship is infected with cholera, he shall detain such ship, and order the master forthwith to moor or anchor the same in such position as such officer of Customs shall direct; and thereupon the master shall forthwith moor or anchor the ship accordingly."

Once in the hands of the sanitary authority's officers, all useful precautionary action will be taken. If, however, the master denies that there is illness on board, the boarding officer usually at once grants him *pratique*, and herein lies the danger to which we have referred. It is distinctly to the master's interest to obtain speedy *pratique* and to avoid delay. If he answer falsely there is no power to punish him, except in the case of cholera, yellow fever, or plague. But, apart from false answers, he has a very strong inducement to keep himself ignorant, whenever practicable, as to any slight or suspicious illness on board his ship. In foreign ports the ship's surgeon is usually questioned, but here he is not consulted by the Customs boarding officer, nor even required to give a certificate as to the health of those on board. A sailor surgeon of considerable experience, who recently wrote to us, was so impressed by this point, that, as the result of his own observation, he undertook, if he had the cases on board, to "guarantee to import into London any number of

cholera cases without being asked one question." We hope and believe that he overestimated his chances of success, but, as a matter of fact, on two occasions last year the port sanitary officers in the Thames found cases of cholera on board vessels after they had been cleared by the Customs. At Cardiff, Swansea, Grimsby, and several other ports around our coast, the sanitary authorities during last autumn, whilst the danger of cholera reaching us was especially acute, employed steam tugs at considerable expense to take the health officer out to sea to meet and inspect foreign coming vessels, and at the same time the Customs officers were accommodated on board, the dual inquiries for revenue and public health purposes being thus performed simultaneously and satisfactorily. In the Thames, the Customs authorities have permitted, since August last, a medical officer of the London Port Sanitary Authority to remain on board their hulk at Gravesend day and night, that officer being thus enabled to accompany the boarding officer, and take all the precautions authorised by the cholera regulations. By these means the flaw to which we desire to draw the serious attention of the proper authorities has been temporarily remedied, but the permanent arrangements need to be reviewed. In doing so it should be borne in mind, that from a public health point of view the clearance of a vessel should be in the hands of a medical man. There may be practical difficulties in making this a general rule, but, at least in the case of those vessels which have a surgeon on board, his certificate as to the health of the vessel should be required before *pratique* is granted.

It is to be hoped also that the present survey will include a revision of the Customs boarding stations. Those stations were, of course, originally appointed in view solely of revenue requirements, and in many cases are situated in the docks, or alongside quays in the vicinity of shipping and dwellings. The danger of allowing an infected vessel to reach such stations before being interrogated and inspected is obvious and real, though doubtless in many cases it may be somewhat difficult to find a remedy.

These are some of the difficulties which it would be well to deal with during the present systematic survey, and thus strengthen our defences against cholera and other infections from abroad.

THE CHOLERA OF 1892 IN HAMBURG.

DR. HUEPPE, Professor of Hygiene in the German University of Prague, who spent the whole of last September in Hamburg, discusses the recent cholera epidemic in that city. He deals first with the bacteriological results, because that epidemic was the first in which bacteriological examinations were made on anything like a large scale. The comma bacillus, said Pettenkofer, is properly speaking the only certain thing in the whole cholera question; and Hueppe adds that at any rate there is no cholera without comma bacilli. But, as the epidemic spread with appalling rapidity—from 83 cases with 22 deaths on the (officially) first day, August 21st, to 1,102 cases with 455 deaths on the sixth day, August 27th—suspicion falls at once on the water supply as the disseminator of the bacillus. There had never been a constant bacteriological control of the famous "Wasser-Kunst," the Hamburg water supply, before the epidemic; neither have comma bacilli been searched for or found before, during the commencement, or at the height of the epidemic till the end of September. Under conditions like those of Hamburg the comma bacilli undoubtedly must have got into the Elbe, because, at least till the twenty-fifth day, the stools were not disinfected at all, and were simply carried through the sewer channels into the river. But even this fact has not been proved. Lubarsch, having found bacilli in the bilge water of a vessel which came from Hamburg with a cholera patient on board, suggested that the bacteria had penetrated into the bilge water not from the patient but from outside, from the Elbe water, through some small leaks in the sides of the ship.

The only case of bacilli having been found in water, was in the harbour of Duisberg on the Rhine (C. Fraenkel), where the stools of a cholera patient were emptied into the river. But no outbreak of the disease followed, and the river, which

was thus denounced as pestiferous, has caused no pestilence. Fraenkel states that two days later he could no longer obtain any culture of bacilli from the same water, a statement which agrees with that of Kraar and Hueppe himself, that the bacilli perish more or less quickly in common water. It is not a river containing a few bacilli which spreads the cholera, but the vessels and sailors that travel on it. Hueppe honestly confesses that as far as the infection of water had to be proved, bacteriology has failed to clear up the etiology of the epidemic of 1892.

From the epidemiological point of view the part taken by the water of the Hamburger "Wasser-Kunst" in the spread of the cholera is established beyond possibility of question. Unlike former epidemics (that of typhoid in 1885-86), where there was an apparent local influence owing to the difference of the soil—marsh and dry land—in spite of the general use of the same water, no such local difference could be traced during the outbreak of the cholera of last year. The first victims of the cholera were mostly sailors or dockworkers and their families, a fact which points to the water of the harbour as the local source of the disease. However, as it is hardly to be believed that all these people, who lived in different parts of the town, drank the harbour water, we are compelled to point to the water supply, which carried the same local cause everywhere, as this supply is drawn from the Elbe just within the harbour.

This water is not only used for general purposes in the streets and houses, and for the cleaning of eating and drinking vessels—an indirect way to the stomach—but is also used for drinking purposes. Of course the well-to-do people do not drink it, but the working classes undoubtedly do, especially when the weather is as hot as it was at Hamburg from the middle to the end of August. And therefore the well-to-do classes, although using the water for general purposes much more than the latter, have, in all parts of the town, suffered from the epidemic comparatively less than the working classes, who used it less for other purposes, but drank it from the water pipes in their houses as well as directly from the river in the harbour. Of the quality of the water we may judge from the following facts.

The main sewer of Hamburg empties itself into the Elbe just below Hamburg Altona. The ebb tide carries the filth down stream, but every flood tide drives it back, and brings it up stream to that place near Rothenburgsort, where the water is taken from the river for the water supply. The discharge from many smaller sewers is driven still further backwards. This water can flow into the reservoirs of the water supply only during high water—that is, at a time when it is loaded with the sewage of the town. There is no central filter at all; the demand for water is so great that there is not even sufficient time to allow the filth to settle in these reservoirs, and thus the water comes, just as it is, into the pipes and in the houses. In every house there is a little reservoir, in which the mud, for the first and last time, can sink to the bottom, but the water is still so insufficiently cleared that in many houses there are filters besides the reservoirs. In 1876 the demand for a central filter bed had made itself heard for the first time; in 1886 the Senate decided to build it, but the *Bürgerschaft* resisted, on the strength of the local theory of Pettenkofer, neglecting his warning as to the necessity of clean water for use and drink. In 1887 the writer gave a lecture on the water supply, and demanded a constant hygienic and bacteriological control of the water; in 1889 the Senate and the *Bürgerschaft* agreed at last, and granted the money for a central filter. In 1892 came the cholera, and found all in the state described above.

Hueppe further calls attention to the difference between the three towns Wandsbeck, Altona, and Hamburg, which together make up the greater Hamburg. Wandsbeck, with a population of 20,571, had 64 cases (3.1 per mille) with 43 deaths (2 per mille); Altona, with 173,279 inhabitants, had 572 cases (3.9) with 328 deaths (2.3); Hamburg State, with a population of 622,530, had 17,974 cases (28.8) with 7,611 deaths (12.2); or, taking only the infected parts—that is, the town and suburbs of Hamburg, among 579,907 inhabitants there were 17,891 cases (30.8) with 7,582 deaths (13). This striking difference between Wandsbeck, Altona, and Hamburg is distinctly traceable to the water supply; thus Wandsbeck, which suffered less than the other two, is supplied with

spring water, whereas Altona and Hamburg derive their water from the Elbe. Altona, however, gets its water from very far down at Blankensee, where the river is cleaner than in Hamburg, and passes it through a good gravel filter, unlike Hamburg, which gets its water from the harbour, contaminated with sewage and absolutely unfiltered. These facts led Hueppe to the inevitable conclusion that the water of the harbour and the water wards was answerable for the outbreak and rapid spread of the epidemic. In order to find a similar typical case we must go back to the epidemics of cholera in London in the years 1849 and 1854, of which even Pettenkofer said that "the London water supply had undoubtedly had a great influence."

The question now arises: How was the water infected? Did the infection come with the emigrants from Russia? that is to say, from the barracks for emigrants, situated near the river. But from the very beginning of their existence, June 20th till August 25th, there was not a single case of cholera within the barracks, and as the emigrants came to the barracks by land, they had to run the gauntlet of a double inspection, first at the Prussian frontier, and secondly in Hamburg itself, and still there was no case known to be imported by them. Another way for the infection would have been by sea from either France or Russia. But the inspection of vessels was not sufficiently strict to allow any positive statement on that subject to be made.

Hueppe suggests another possibility. As there have been observed many cases of a very slight diarrhoea in which bacilli have been found, and many typical ones in which bacilli could not be discovered, the bacilli might have been carried to Hamburg with such a case of very slight diarrhoea, which escaped notice, and might have found a very good nutrient medium in the water of Hamburg as it was then. Hueppe points out that many organisms living in water cannot bear sudden rises of the temperature of the water, and die. Now, rises to the extent of 20° to 25°C. occurred very often at that time, and the high temperature being maintained by the high temperature of the air, the organisms, especially in the reservoirs of the houses, died, and made the water a nutrient medium for the bacilli, which require an albuminous medium. Further albumen was supplied to the water through many organisms, even fishes being killed by the disinfectants which were used in the most reckless way, and thus the bacilli, which otherwise lose their virulence by want of albumen, found a favourable medium, in which they were able not only to maintain their virulence, but even to multiply freely.

The chief thing to be done in Hamburg now is a radical change in the water supply. But as long as there are sewers opening into the river, it will not be safe to take water for domestic use from the Elbe at any distance up the river. As plenty of good ground water is to be found in the North of Germany, Hueppe advises the new supply to be drawn from that source. Else the canalisation must be altered in such a way as to carry the water over fields for irrigation before it reaches the river again.

As to the level of the ground water in Hamburg or other local conditions, no influence has been traced to those factors. The water was the only general source, and by spreading the infection over the whole town created several local sources of infection, which lasted for a time, even after the infection had disappeared from the general water supply. These secondary local sources may, of course, have been favoured and supported by the bad conditions of life and dwelling rooms and of the water reservoirs in the houses, etc. In Hueppe's opinion, the further spread of the disease was not caused by contagion but by the secondary foci. Hueppe strongly criticises the mode of life of the Hamburg working people, and still more the condition of their dwellings. No dirty place in Italy or in Eastern countries of Europe could be compared with that part of Hamburg which is called "das Gängeviertel," it is the worst sort of usury for land and building which is practised there and the better situated classes, instead of helping and supporting their brethren, instead of doing something by nursing or by carrying the diseased to the hospitals, were very busy in spreading the fear of cholera in a ridiculous and miserable manner. All Germany, guided by the Government, seconded them, the public mind being haunted by the comma bacillus. Facts have shown that the cholera is not a contagious disease

Coming to the question, What was done in Hamburg and elsewhere in Germany to check the spread of the infection? Hueppe points out that infection is like a chain consisting of several unequal links having an effect only when all links are present. First there must be something promoting the infection, the x which lets loose the disease; the importance of this is recognised even by Pettenkofer. Secondly the individual predisposition, that which Pettenkofer calls the z . Theoretically x and z ought to be sufficient to produce an infection, but that is only the case in experiment or rather seems to be the case. In fact we need a third link, that is to say the various conditions under which the activity of the infection comes into play, and Pettenkofer makes this third quantity, y , too narrow, giving to it the meaning only of a temporary local disposition.

The importance of each of these links has been very different at different times and in the eyes of different schools. The pathologists, who take their inspiration from Virchow, have overrated z and underrated y and x ; on the other hand Pettenkofer and his followers have dwelt too much on y and far too little on the other two factors; whilst the bacteriologists, under the guidance of Pasteur and Koch, have exaggerated the x .

THE FORTHCOMING INTERNATIONAL CONFERENCE.
THE Dresden International Cholera Conference still continues to occupy the attention of most European Governments, many of the Powers having already acquiesced in the programme placed before them by the Austro-Hungarian Cabinet. The share which England shall take in the matter has been the subject of consideration by the Foreign Office and Local Government Board. Any part which England sees fit to take can hardly be more than to endeavour to lead Continental health departments to adopt those principles which have governed the action of this country for many years past. On the question of land quarantines and inland navigation difficulties, we stand on a footing altogether different from our neighbours; and it seems doubtful whether England would have the same voice in these matters as on the subject of sea quarantines, in which she is pre-eminently interested. Still, uniformity of action—especially of well-directed action—has much to commend it. But how far the best results will follow on a conference held in the very teeth of an expected cholera invasion, it is difficult to say.

CASUALTY PATIENTS AT ST. BARTHOLOMEW'S.

WE extract the following from one of the public papers: "The annual statement of the clerk of St. Bartholomew's Hospital states that 5,953 in-patients, 16,143 out-patients, and 142,745 casualty patients were treated there during last year." We would call the serious attention of all those interested in hospital reform—and this includes the whole medical profession as well as a large proportion of the lay public—to the course pursued at St. Bartholomew's. The abuses of the out-patient system have been demonstrated till the very fulness of proof has produced satiety, and the subject is voted stale. No one denies them; but by calling one class of out-patients "casualties" (which they are not in any sense beyond the most insignificant fraction of the number), an attempt is being made to perpetuate and even aggravate the evils of the system.

In the out-patient department some inquiry is possible, both into the patient's circumstances and the nature of the case: treatment can be deliberate and efficacious, clinical teaching may be carried out. But think of 140,000 persons jostling through the casualty room in a single year! Investigation is precluded, treatment is a farce, teaching is not even professed. And yet, in spite of the universal public opinion, both of the lay and medical public, this system, of which we cannot trust ourselves to write in the terms it deserves, is kept up at the very hospital where it was so mercilessly exposed to public scorn and reprobation by one of the casualty physicians themselves—Dr. R. Bridges in the *St. Bartholomew's Hospital Reports*—and under the implied sanction of medical men high in office at the Colleges of Physicians and Surgeons. Can anyone, in the face of such a fact as this, contend that no interference with the liberty of action of indi-

vidual hospitals is permissible? Is it not obvious, on the contrary, that if the gentle sway of some such central body as that indicated by the Lords' Report is not introduced, so that the eccentricities or mistakes of individual charities may be subject to the enlightened criticism of their fellows and the public, the evils to which public attention has so long been directed will reach a height necessitating sterner interference? It was the financial aspect of the question, naturally enough, which most struck a body of public men like the Lords' Committee; it is the medical aspect which most impresses us, but the conclusion is the same.

SMALL-POX IN GREAT BRITAIN.

[SPECIAL WEEKLY REPORT TO THE BRITISH MEDICAL JOURNAL.]

SUMMARY.

It will be seen from the detailed reports from all parts of the country which we publish that elsewhere than in London there was a distinct falling off in the number of small-pox cases reported to us as having occurred last week. But the disease seems to be extending westward and southward, though in small amount. There appears to be a general opinion that, with but few exceptions, the disease is spread by the agency of tramps. One pitiable feature of the present prevalence is the erection in numerous instances of temporary hospitals of very questionable character, which experience has shown to be ill-fitted to their purpose, and to delay, only too frequently, other and permanent provision for the isolation of infectious disease.

LONDON.

Small-pox does not show any signs of decrease, the number of admissions to the Hospital Ships during last week being up to that of previous weeks. So far as we can learn, some 30 cases occurred last week in the metropolis, with one death; there being 106 cases on the ships at the end of the week, in addition to 22 cases in the Highgate Small-pox Hospital. The medical superintendent of the Hospital Ships at Long Reach has reported that many of the admissions are of persons of the pauper class—chiefly tramps—the infection having in numerous cases been spread in casual wards; whilst the disease seems to have obtained little hold on the settled residents in London. Pentonville Prison has contributed several cases lately, and also the Salvation Army shelters; and the attention of boards of guardians has been drawn to the desirability of systematic medical inspection of casual wards, shelters, common lodging houses, and the like.

LANCASHIRE.

Small-pox gives evidence of some abatement in Manchester, where last week only 21 cases occurred, with 3 deaths, against 67, 48, 56, and 44 in the preceding four weeks. Of 380 patients in hospital at the end of the week, February 4th, 202 were sufferers from small-pox, and eight of the eleven registration subdistricts of the city furnished cases. Information furnished to the Chorlton guardians shows that but little notice is taken by the poorer classes of the offers of gratuitous revaccination, whilst a large number of well-to-do folk are paying for this security. At Warrington also small-pox is decreasing, only some half-dozen cases having been reported last week. Something like £10,000 has been the cost to the town of the epidemic. Vaccination and revaccination are credited with having been the best friends to the borough, and no death in a vaccinated person has been recorded. The death-rate from the malady has been appreciably lower since the Hope Hospital has been able to give a greater cubic space to each patient. In the adjoining rural district there have been a dozen cases, but arrangements have now been made for the removal of patients to the Corporation Hospital. Only a few cases were heard of last week in Liverpool, but over a score are said to be in hospital at Runcorn, in addition to several unisolated cases in the town. Some cases of small-pox at Stalybridge have led to Hyde placing 12 beds at the disposal of the town if required, pending some action for joint use of the Hyde Hospital by Stalybridge and Dukinfield. There has been an increase of small-pox at Stockport, and St. Helens, Wigan, Bury, Blackburn, and Preston were also freshly invaded last week, whilst Oldham and Chadderton had a score of case, some three or four belonging to the latter town, and one death occurred in the former. Dr. Sergeant has reported that the Oldham refuse depot is within 300 yards of nine-tenths of the small-pox cases that have occurred in Chadderton, though he does not allege any direct bearing of the depot upon the epidemic, which, as is well known, he attributes largely to the action of the Corporation Hospital. At Salford the small-pox prevalence continues to attract considerable attention, and extra attendances for vaccination have been instituted. Two deaths occurred last week. The Blackburn guardians have appointed several assistant vaccination officers for a limited period, for the purpose of instituting a house-to-house visitation in the localities frequented by tramps, with a view of securing more general vaccination and revaccination.

YORKSHIRE.

Last month there were 365 cases of small-pox notified in sixty-two districts in the West Riding, eighteen districts being newly invaded. The disease was widely diffused throughout the Riding, the cases showing an increase over those in December. Some sensation has been caused at Barnsley by the liberation of a prisoner at Wakefield, who was found on reaching the former town, and after having visited several public-houses, to be suffering from small-pox. Several tramps have recently developed